CLAIMS

What is claimed is:

1. A frame matching method for use in a communication system, wherein the communication system includes at least one transmitting device and at least one receiving device, and wherein the at least one transmitting device includes an encoder and a rate matching device for matching data into a standard data frame, the method comprising the steps of:

   a) obtaining a data set and the standard data frame, wherein the data set comprises a plurality of puncture pattern groups;

   b) determining a standard puncture pattern and a puncture disable quantity based upon the data set obtained in step (a); and

   c) matching the data set into the standard data frame utilizing the standard puncture pattern and the puncture disable quantity obtained in step (b).

2. The frame matching method as defined in Claim 1, wherein the obtaining step (a) further comprises obtaining a data length, a puncture retaining ratio and a bit retention quantity.

3. The frame matching method as defined in Claim 2, wherein the determining step (b) further comprises determining a first puncture pattern, a second puncture pattern, a first puncture pattern repetition quantity and a second puncture pattern repetition quantity based on the standard data frame, the data length, the puncture retaining ratio and the bit retention quantity obtained in step (a), wherein the first puncture pattern is associated with standard puncturing and the second puncture pattern is associated with disabling puncturing.

4. The frame matching method as defined in Claim 3, wherein the determining step (b) comprises the sub-steps of:

i) determining Q utilizing the following equation: Q=[L/(M/PR2)], where L=the data length, M=the bit retention quantity and PR2=the puncture retaining ratio;

ii) determining M' utilizing the following equation: M'=floor(N2/Q), where N2=the standard frame;

iii) determining the second puncture pattern repetition quantity (Q2) utilizing the following equation: Q2=N2-M'*Q;

iv) determining the first puncture pattern repetition quantity (Q1) utilizing the following equation: Q1=Q-Q2; and

v) determining the first puncture pattern and the second puncture pattern.

5. The frame matching method as defined in Claim 3, wherein the matching step (c) comprises the sub-steps of:

i) puncturing data utilizing the first puncture pattern for a quantity of times approximately equivalent to the first puncture pattern repetition quantity; and

ii) puncturing data utilizing the second puncture pattern for a quantity of times approximately equivalent to the second puncture pattern repetition quantity.

6. The frame matching method as defined in Claim 5, wherein the sub-step (i) is performed before the sub-step (ii).

7. The frame matching method as defined in Claim 5, wherein the sub-step (ii) is performed before the sub-step (i).

8. The frame matching method as defined in Claim 5, wherein the sub-step (i) and (ii) are performed concurrently in an alternating fashion.

9. The frame matching method as defined in Claim 5, wherein the sub-step (i) and (ii) are performed concurrently in a random fashion.

10. The frame matching method as defined in Claim 5, wherein the sub-step (i) is performed on puncture pattern groups that have a higher priority.

11. The frame matching method as defined in Claim 5, wherein the sub-step (i) is performed pseudorandomly.

12. A frame matching method for use in a communication system, wherein the communication system includes at least one transmitting device and at least one receiving device, and wherein the at least one transmitting device includes an encoder and a rate matching device for matching data into a standard data frame for transmission in the system, the method comprising the steps of:

a) obtaining a data set;

b) selecting a transmission data frame from a plurality of standard data frames;

c) determining whether data repetition is required for matching the data set to the transmission data frame, and if so, performing data repetition; and

d) determining whether data puncturing is required for matching the data set to the transmission data frame, and if so, performing data puncturing by puncture disabling techniques.

13. The frame matching method as defined in Claim 12, wherein the selecting step (b) comprises selecting the transmission data frame that is associated with a frame N2 in accordance with the following equation: $N1/PR1 < L < N2/PR2$, where L = a data length that is associated with the data set, N1 = a standard data frame that is smaller than and adjacent to N2, PR1 = a puncture retaining ratio that is associated with N1 and PR2 = a puncture retaining ratio that is associated with N2.

14. The frame matching method as defined in Claim 12, wherein the determining whether data repetition is required step (c) comprises determining whether a data length associated with the data set is in accordance with following equation: $L < N2$, wherein L is the data length associated with the data set and N2 is the transmission data frame.

15. The frame matching method as defined in Claim 12, wherein the determining whether data puncturing is required step (d) comprises whether a data length that is associated with the data set is in accordance with following equation: $N2 < L < N2/PR2$, where L = the data length that is associated with the data set, N2 = the transmission data frame, PR2 = a puncture retaining ratio that is associated with N2.

16. A coder, including:

a) an input node for receiving a data set comprising a plurality of puncture pattern groups;

b) a standard puncturing pattern device, operatively coupled to the input node, adapted to puncture the data set, and adapted to disable puncturing for an individual puncture pattern group; and

c) an output node, operatively coupled to the standard puncturing pattern device, capable of outputting data from the standard puncturing pattern device.

17. The coder as defined in Claim 16, wherein the coder further comprise a microprocessor, operatively coupled to the standard puncturing pattern device, capable of transmitting a plurality of control commands to the standard puncturing pattern device, wherein the plurality of control commands comprise information regarding disable puncturing.

18. The coder as defined in Claim 16, wherein the standard puncturing pattern device is capable of operating in a puncturing data mode and a disable puncturing data mode.

19. The coder as defined in Claim 18, wherein the standard puncturing pattern device utilizes a first puncture pattern when operating in the puncturing data mode and a second puncture pattern when operating in the disable puncturing data mode.

20. A coder system for augmenting existing data puncturing for frame matching in a communication system, wherein the communication system comprises at least one transmitting device and at least one receiving device, wherein the at least one transmitting device comprises an encoder and a rate matching device for matching data into a standard data frame, comprising:

a) means for obtaining a data set and the standard data frame, wherein the data set comprises a plurality of puncture pattern groups;

b) means for determining a standard puncture pattern and a puncture disable quantity based upon the data set obtained in the means for obtaining a data set and the standard data frame ; and

c) means for matching the data set into the standard data frame utilizing the standard puncture pattern and the puncture disable quantity obtained in the means for determining a standard puncture pattern and a puncture disable quantity.